

ISSN 2250-3153

# International Journal of Scientific and Research Publications

**Print Edition, Volume 4, Issue 7**  
**July 2014 Edition**

**IJSRP**[www.ijsrp.org](http://www.ijsrp.org)



# Supplements Effect of Virgin Coconut Oil and Albumin Capsules (Catfish protein) on TB Patients Receiving Multi Drugs Therapy-DOTS Strategic in BBKPM Makassar, Indonesia

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**Abstract**-Pulmonary tuberculosis is a global problem requiring 6-month MDT-DOTS continuous treatment. This time based treatment along with the combination of VCO nutritional supplement and/or Catfish-extracted albumin has shown a significant benefit on improving immune response, accelerating the conversion of BTA sputum, increasing nutritional states and improving chest X-ray imaging in people with active pulmonary TB. This study aimed to compare the changes in pulmonary TB patients treated MDT-DOTS combined with supplemented VCO and/or albumin with that in the MDT-DOTS placebo group. The experimental study was designed by using two pre and post test groups with double blind randomized controlled trial. Eighty (80) participants met with study inclusion and were randomly distributed in the experimental groups. The study result has shown significant improvements in all observed variables among the experimental groups receiving the combination of MDT-DOTS with VCO and/or Catfish-extracted albumin. These are including *accelerating the conversion of BTA sputum* (VCO i.e.  $p < 0.00$ ; Catfish-extracted albumin i.e.  $p < 0.04$ ; and VCO + Catfish-extracted albumin i.e.  $p < 0.00$ ), *increasing nutritional state* (VCO i.e.  $p < 0.03$ ; Catfish-extracted albumin i.e.  $p < 0.003$ ; and VCO + Catfish-extracted albumin i.e.  $p < 0.01$ ) and improving chest X-ray imaging (VCO i.e.  $p < 0.04$ ; Catfish-extracted albumin i.e.  $p < 0.003$  and VCO + Catfish-extracted albumin i.e.  $p < 0.001$ ). MDT-DOTS treatment combined VCO nutritional supplement and/or Catfish-extracted albumin capsules could accelerate the conversion of sputum smear, could improve nutritional status and improve chest X-ray imaging.

**Index terms:** MDT-DOTS, Supplement VCO and albumin capsules, sputum smear conversion, nutritional status, chest X-ray imaging

## I. INTRODUCTION

World Health Organization (WHO) reported that pulmonary TB disease remains a global health problem because it cause the death 1.40 million. People world widely Indonesia was ranked the world's third most 242 655 cases of pulmonary TB, the incidence rate of 450 per 100,000 population, the prevalence rate of 680 per 100,000 population as well as the cause of death of 65 per 100,000 and ranks 21th out of 27 countries with high cases of MDR / XDR [1].

The principle of pulmonary TB treatments patients is anti-tuberculosis drugs and the improvement of the immune system that will add a strong function bactericid and bacteriostatic. DOTS treatment strategy to break the chain of transmission of pulmonary TB cure rate at least 85-95% [2] as well as sputum smear conversion takes an average of between 8 to 12 weeks. In Latvia DOTS treatment BTA sputum conversion rate below 12 weeks [3].

Fast time sputum smear conversion in pulmonary tuberculosis treatment is influenced by these factors: nutrition status, balanced nutrition [4, 5, 6]. Malnutrition status causes decreased immune response against TB infection in individuals lung [7, 8], so the risk of conversion failure 8.861 times greater than the normal nutritional status and pulmonary tuberculosis patients with severe malnutrition have an increased risk of conversion failure 30.918 times greater than the normal nutritional status [9].

Suppression of the immune system cellular nutritional status is less characterized by a decrease in the number of CD4 + cells and the levels of IFN- $\gamma$  in patients infected with the germs of TB [10]. Cells CD4 + T very important in the continuing generation against pathogenic germs pulmonary TB by stimulating Th1 producing IFN- $\gamma$  to activate alveolar macrophages [11]. Supplementing nutrients such as macro and micro albumin capsules (protein catfish) which is rich in albumin protein, essential amino acids, vitamins and minerals [12] or